

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,683,389 B2
APPLICATION NO. : 09/938101
DATED : January 27, 2004
INVENTOR(S) : Geis

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The title page showing the illustrative figure should be deleted to be replaced with the attached title page.

Drawing sheets, consisting of figs. 1-10, should be deleted to be replaced with the drawing sheets, consisting of figs. 1-10, as shown on the attached page.

Signed and Sealed this

Fifth Day of February, 2008



JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) United States Patent
Geis(10) Patent No.: US 6,683,389 B2
(45) Date of Patent: Jan. 27, 2004

(54) HYBRID ELECTRIC VEHICLE DC POWER GENERATION SYSTEM

(75) Inventor: Everett R. Geis, Orange, CA (US)

(73) Assignee: Capstone Turbine Corporation, Chatsworth, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(74) Attorney, Agent, or Firm—Sterne, Kessler, Goldstein & Fox P.L.L.C.

(57) ABSTRACT

A hybrid electric vehicle, such as a bus or delivery vehicle, includes batteries and a turbogenerator/motor connected through a double conversion control system. The batteries and the turbogenerator/motor are each connected to a DC bus through bi-directional power converters operating as customized bi-directional switching converters configured, under the control of a power controller, to provide an interface between the DC bus and the batteries and turbogenerator/motor, respectively.

7 Claims, 10 Drawing Sheets

(21) Appl. No.: 09/938,101

(22) Filed: Aug. 23, 2001

(65) Prior Publication Data

US 2002/0070557 A1 Jun. 13, 2002

Related U.S. Application Data

(63) Continuation of application No. 09/609,099, filed on Jun. 30, 2000, now abandoned.

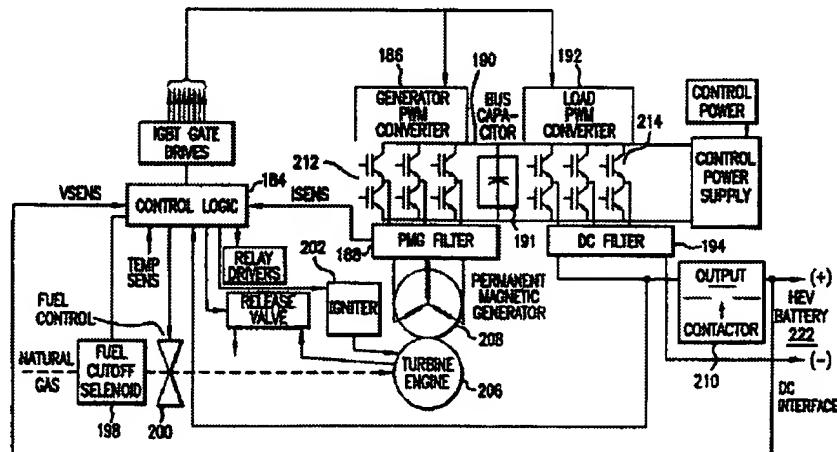
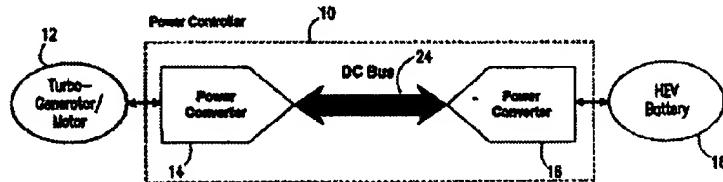
(51) Int. Cl' F02N 11/06

(52) U.S. Cl. 290/40 C; 180/65.2

(58) Field of Search 180/65.2; 322/16; 290/40 R

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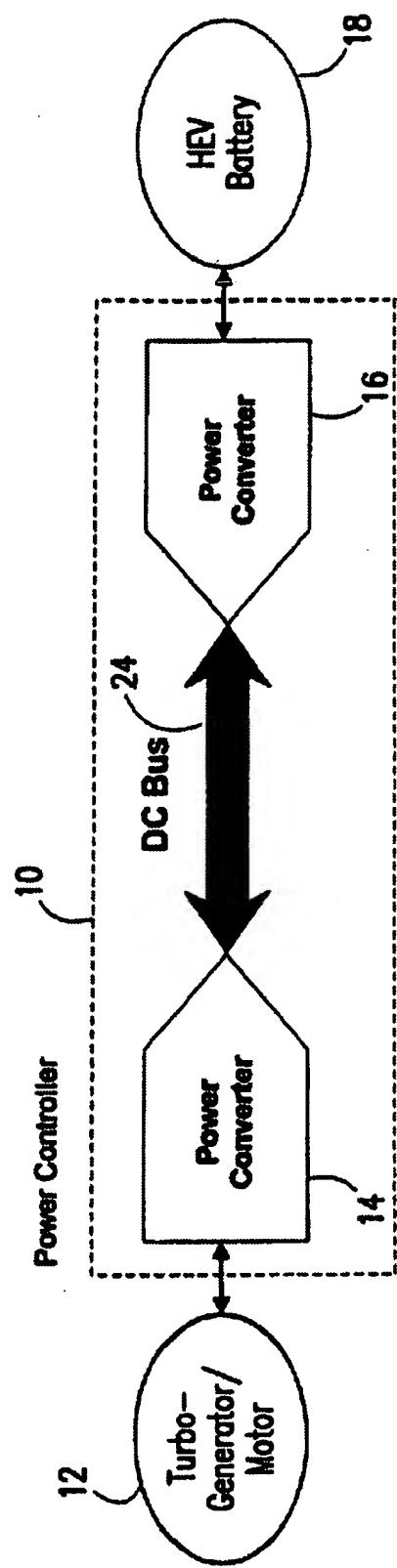


FIG. 1

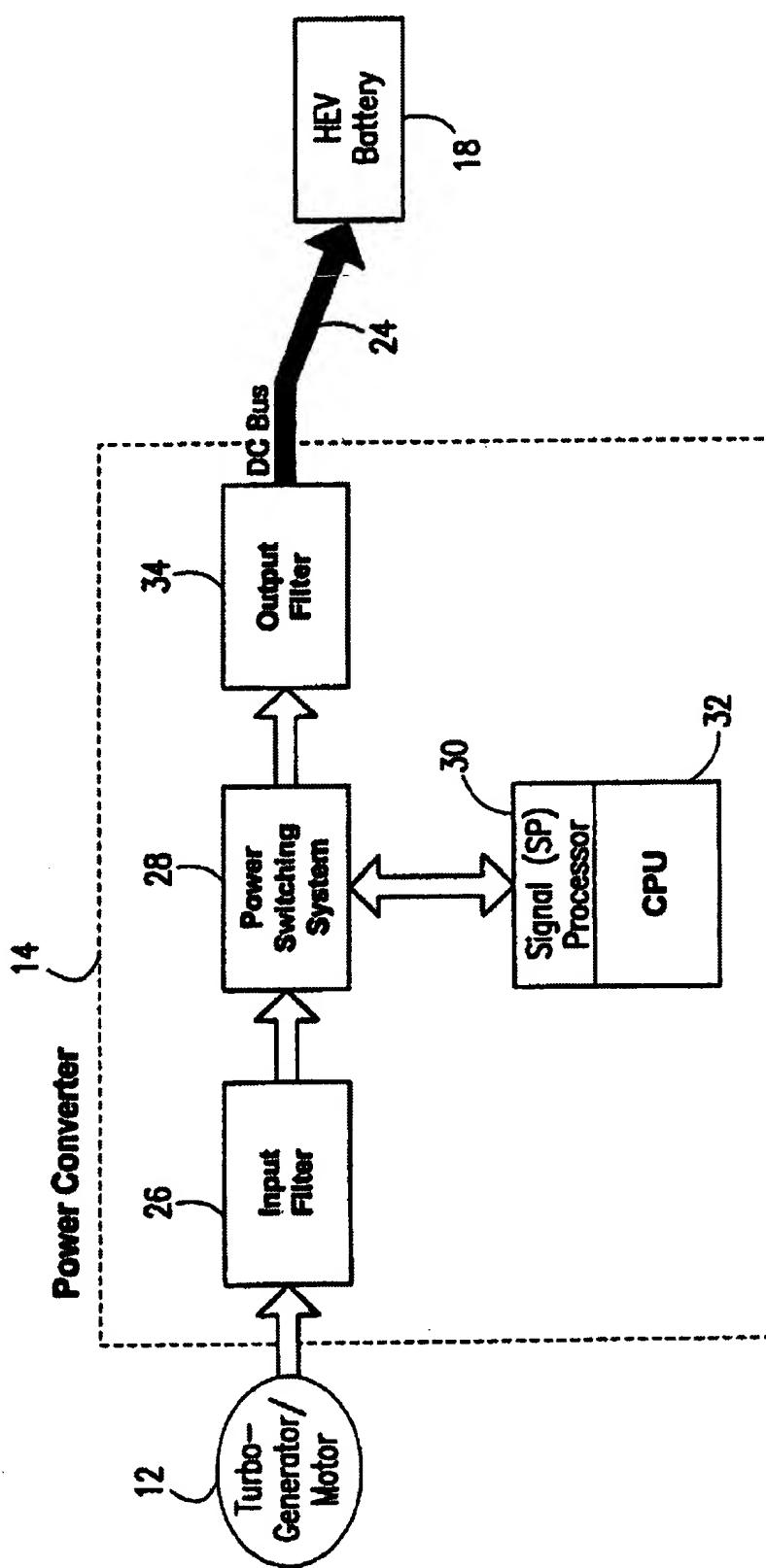


FIG. 2

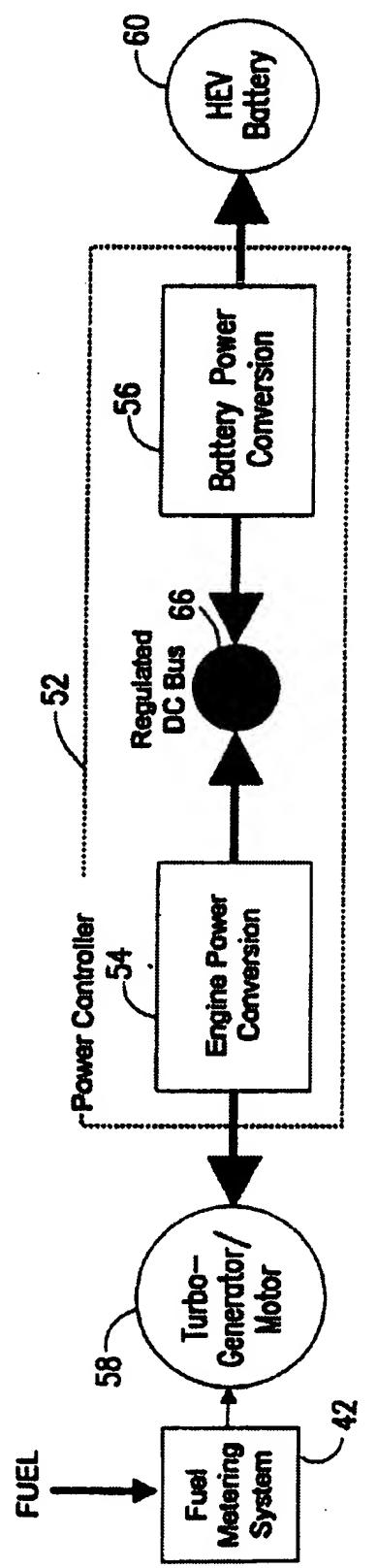
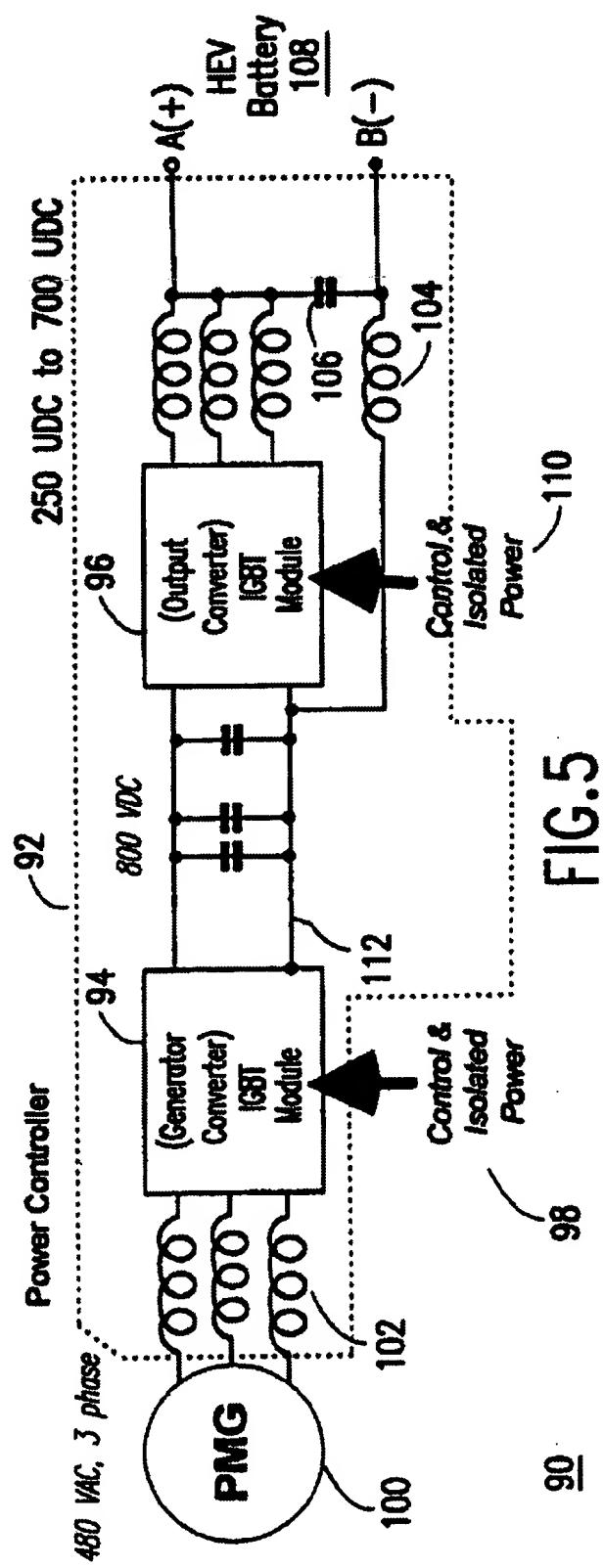
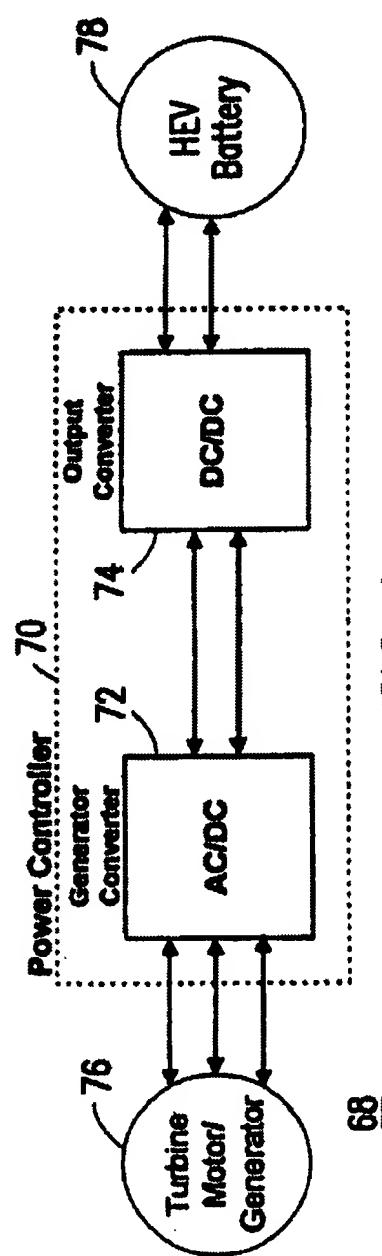


FIG.3



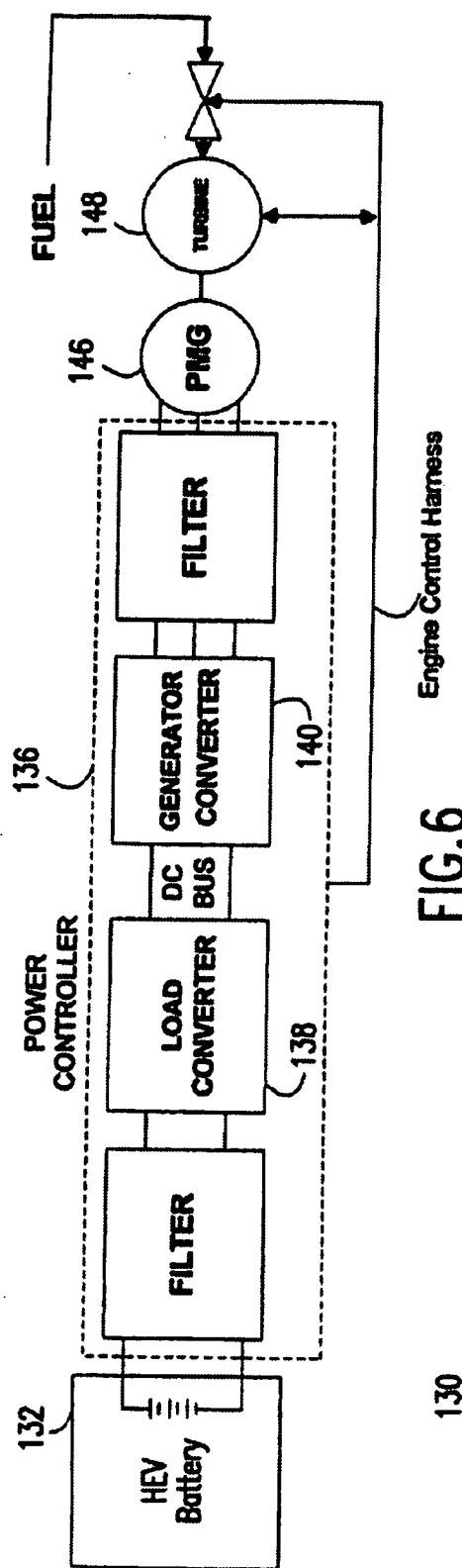


FIG. 6
Engine Control Harness

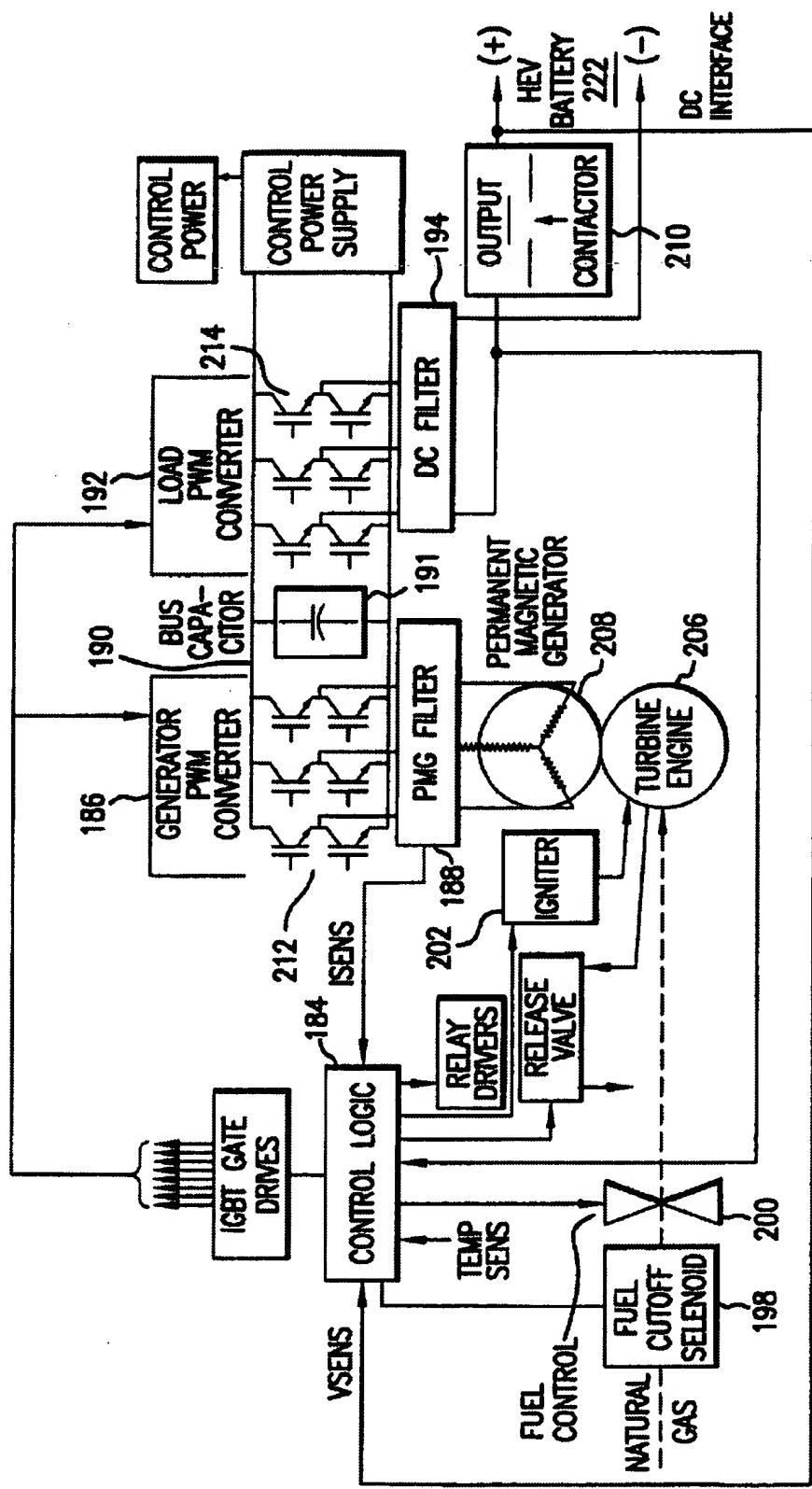
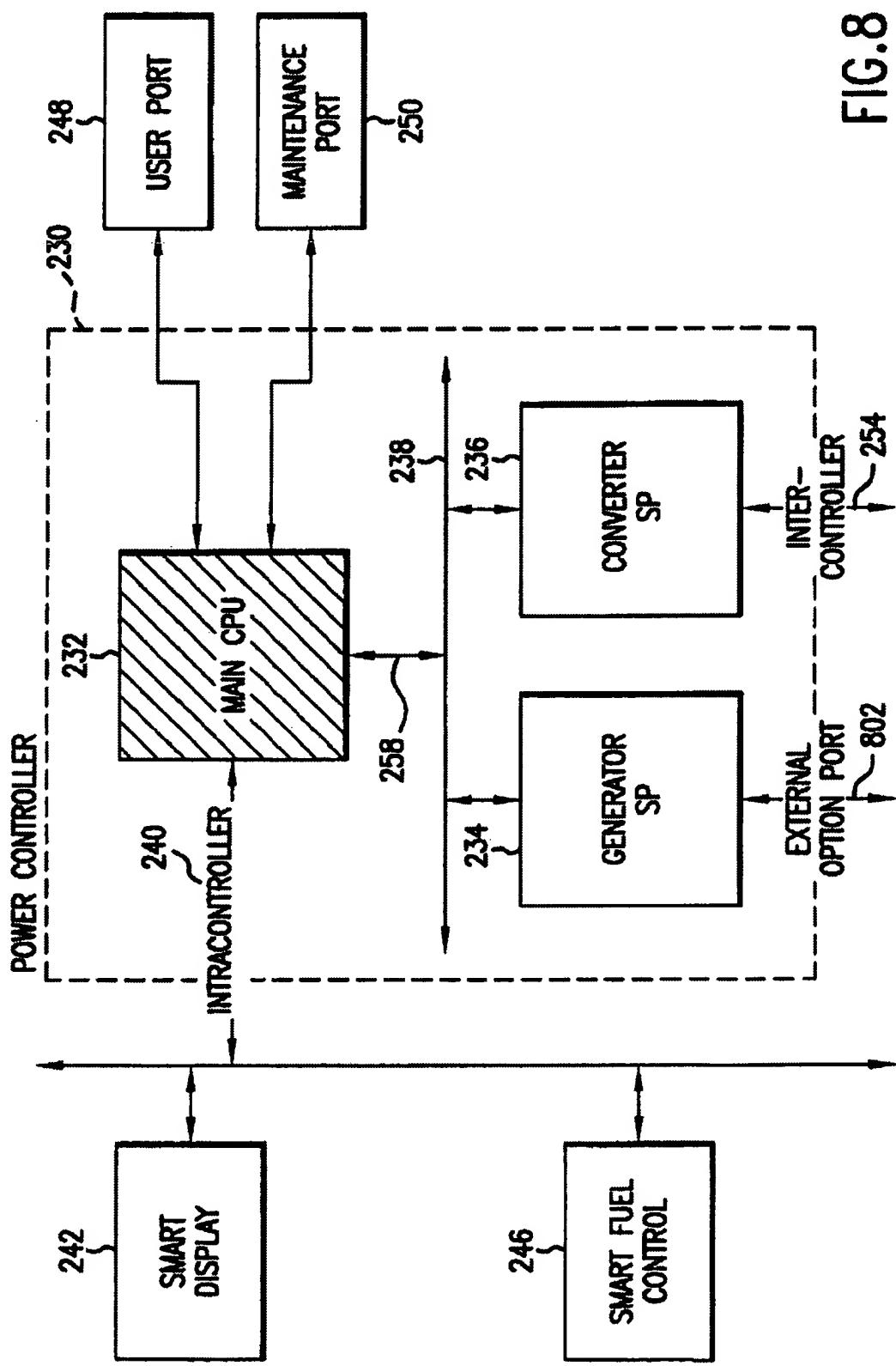


FIG. 7

180

FIG.8



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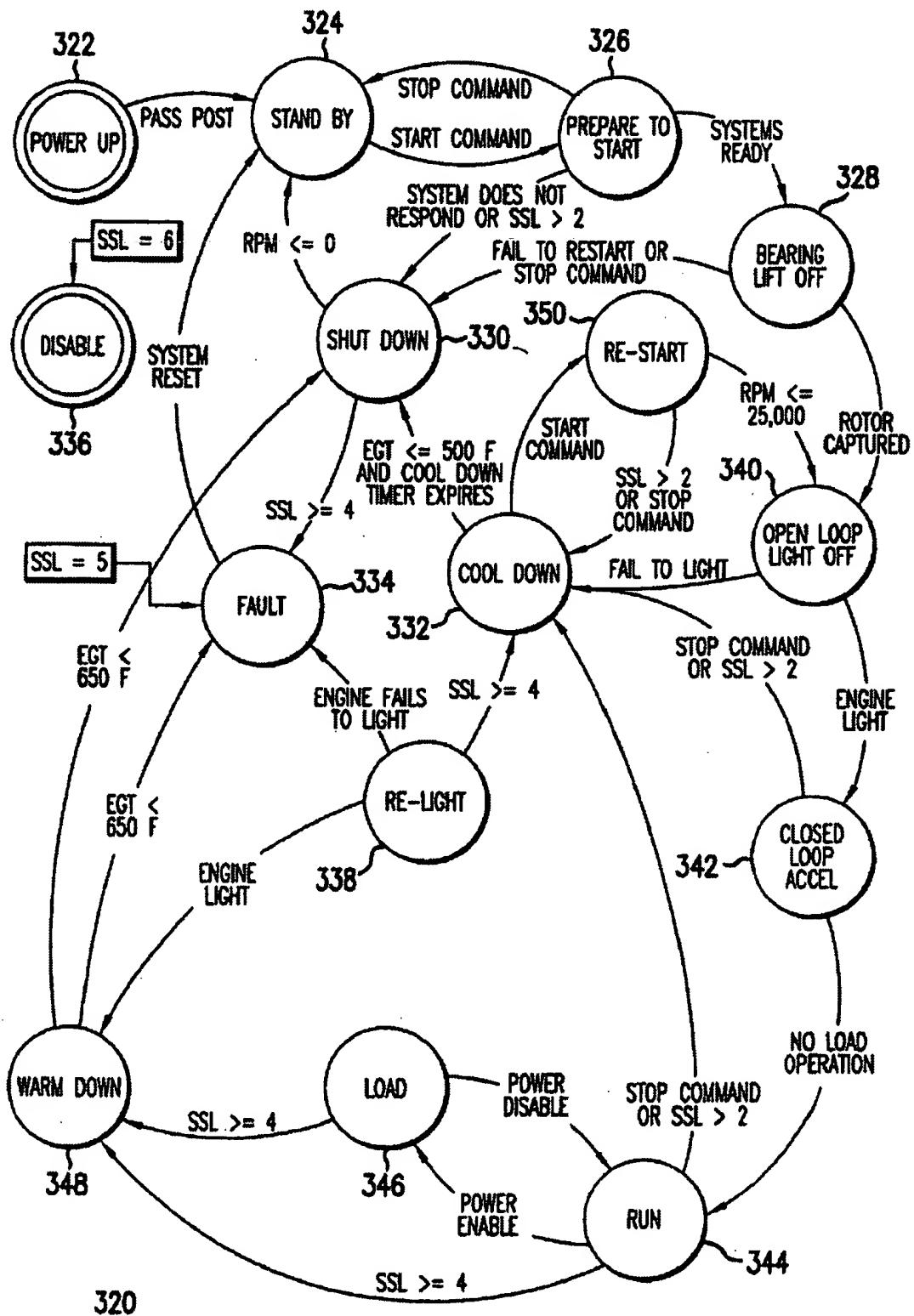


FIG.9

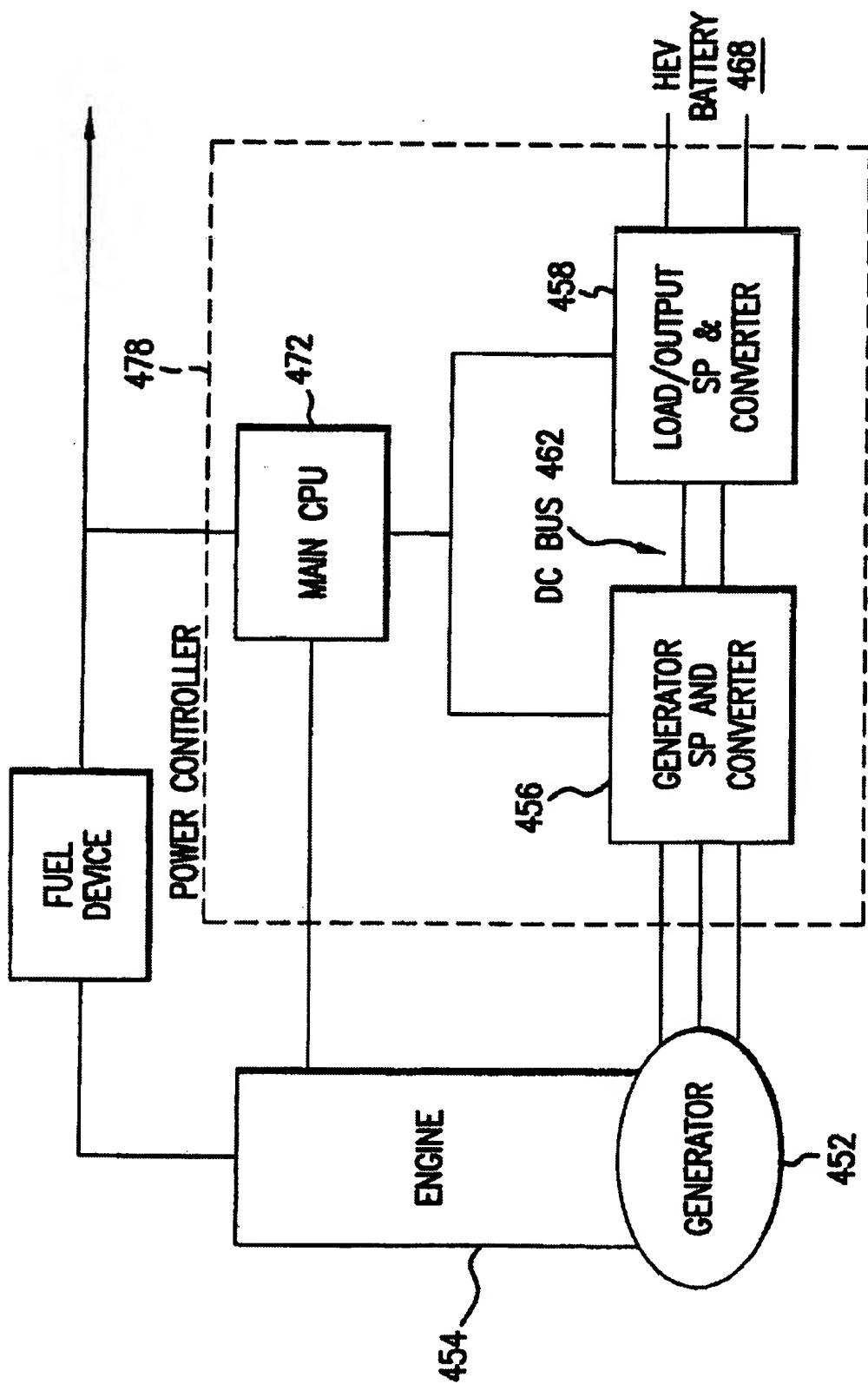


FIG. 10

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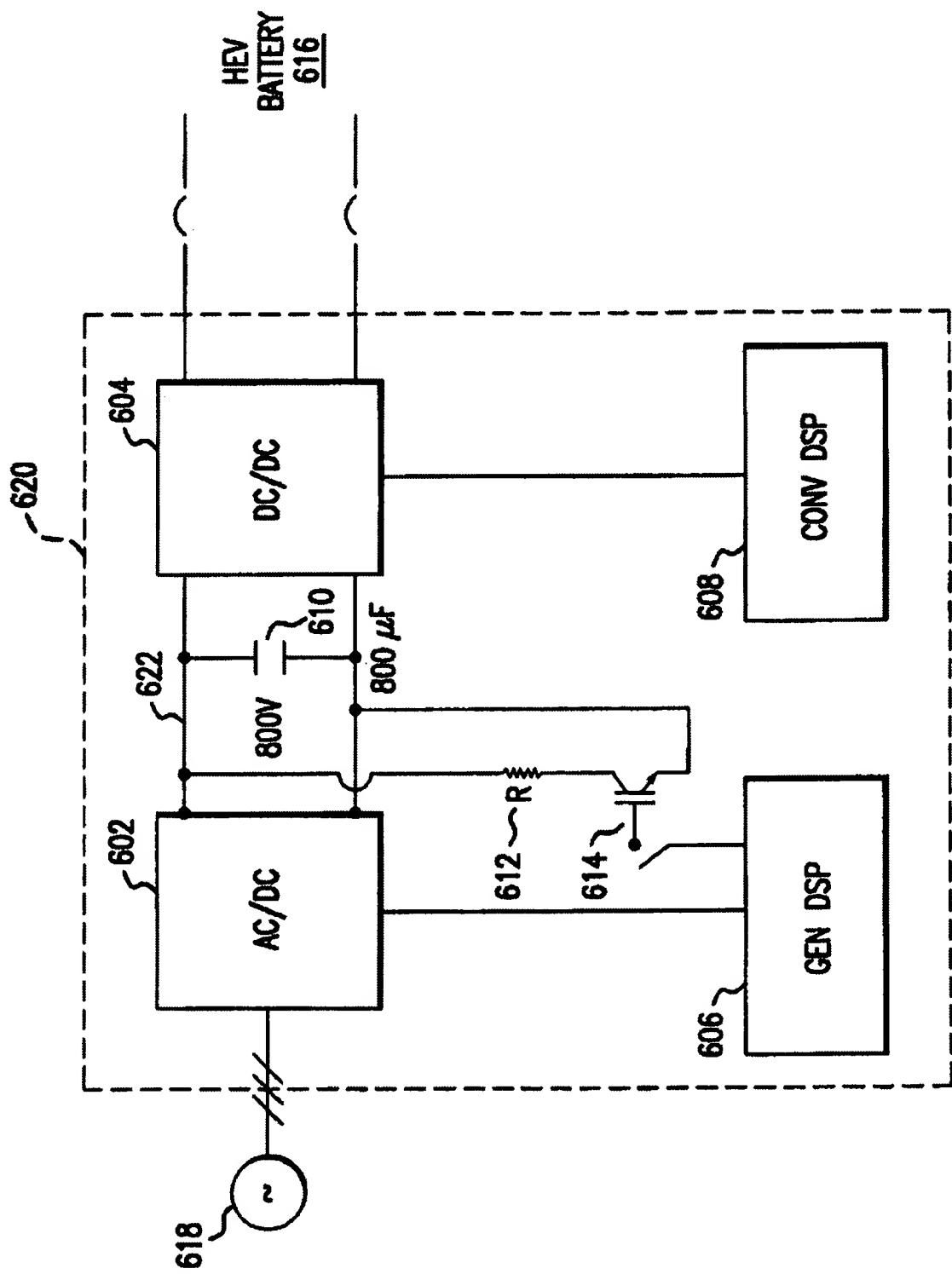


FIG. 11